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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 09/660,386 | 09/12/2000 | Vladislav Vashchenko | NSC1-H1200 | 6925 |
| 33402 | 7590 | 09/09/2004 | EXAMINER | |
| LAW OFFICES OF MARK C. PICKERING P.O. BOX 300 PETALUMA, CA 94953 | | | NADAV, ORI | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2811 | |

DATE MAILED: 09/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/660,386

Applicant(s)

VASHCHENKO ET AL.

Examiner

ori nadav

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 9 and 13-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 9 and 13-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 9 and 13-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim (5,844,280).

Regarding claims 16-17 and 19, Kim teaches in figure 3 and related text a device comprising a semiconductor substrate 1 of a first conductivity type P having a surface, a first well region 2a of a second conductivity type N disposed in the semiconductor substrate, a second well region 2b of the second conductivity type disposed in the semiconductor,

a gap region of the semiconductor material located only between the first and second well regions, the gap region contacting the surface;

a first contact region P+ 3a of the first conductivity type disposed in the first well, a second contact region N+ 4a of the second conductivity type disposed in the second well region and being electrically connected to the first contact region to have a same potential, a first trigger region N+ 6a of the second conductivity type disposed in the first well region and spaced apart from the first

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and second contact regions, a third contact region P+ 3b of the first conductivity type disposed in the second well region, a fourth contact region N+ 4b of the second conductivity type disposed in the second well region and being electrically connected to the third contact region to have a same potential, a second trigger region N+ 6b of the second conductivity type disposed in the second well region and spaced apart from the third and fourth contact regions, the first trigger region being positioned such that no other similar region having the not having the second conductivity type lies between the first trigger region and the second trigger region, wherein the first trigger region is spaced apart from the bottom surface of the first well, and wherein the first and second trigger regions contacting the gap and the semiconductor material, and formed on opposite sides of the gap, wherein

the first and second trigger regions adjoin the semiconductor material.

Regarding claim 16, Kim teaches in figure 3 a device region that overlies and contacts the surface at a location where the gap region contacts the surface between the first and second wells, the device region at the location being free of a gate and not lying below a gate, for the following reasons:

Claim 16 recites a device formed in a semiconductor material (substrate) of a first conductivity type, the semiconductor material (substrate) having a surface. The surface of the substrate extends along the entire surface of the substrate, and is not limited to a certain location. A gap region of the semiconductor material is located only between the first and second well regions, wherein the gap region

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contacting the surface. The recited limitation for the gap region means that the gap region can comprise the entire space between the first and second well regions. Part of regions 6b and 6a in Kim's device, which are not located inside the first and second wells, can be part of the gap region. Therefore, Kim teaches in figure 3 a device region that overlies and contacts the surface at a location where the gap region contacts the surface between the first and second wells (i.e. inside regions 6b and 6a and outside the first and second wells), the device region at the location being free of a gate and not lying below a gate, as claimed.

Regarding claim 18, Kim teaches in figure 3, the dopant concentrations of the first and second trigger regions are greater than the dopant concentrations of the first well region and the second well region, respectively.

Regarding claim 20, Kim teaches in figure 3, the first trigger region is not directly electrically connected to the third contact region and the second trigger region is not directly electrically connected to the first contact region.

Regarding claims 13 and 14, the claimed limitations of a device wherein during first and second ESD events, first and third potentials on the first and second, and third and fourth, contact regions are greater than second and fourth potentials on the third and fourth, and first and second contact structures, respectively.

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Regarding claim 15, Kim teaches a semiconductor material has a top surface; the first well has a side surface that contacts the top surface, and a bottom surface that contacts the side surface; and the first trigger region is spaced apart from the bottom surface.

Response to Arguments

Applicant argues that Kim does not teach a device region free of a gate and not lie below a gate, as recited in claim 16.

Claim 16 recites a device formed in a semiconductor material (substrate) of a first conductivity type, the semiconductor material (substrate) having a surface. The surface of the substrate extends along the entire surface of the substrate, and is not limited to a certain location. A gap region of the semiconductor material is located only between the first and second well regions, wherein the gap region contacting the surface. The recited limitation for the gap region means that the gap region can comprise the entire space between the first and second well regions. Part of regions 6b and 6a in Kim's device, which are not located inside the first and second wells, can be part of the gap region. Therefore, Kim teaches in figure 3 a device region that overlies and contacts the surface at a location where the gap region contacts the surface between the first and second wells (i.e. inside regions 6b and 6a and outside the first and second wells), the device region at the location being free of a gate and not lying below a gate, as claimed.

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Papers related to this application may be submitted to Technology center (TC) 2800 by facsimile transmission. Papers should be faxed to TC 2800 via the TC 2800 Fax center located in Crystal Plaza 4, room 4-C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The Group 2811 Fax Center number is (703) 308-7722 and 308-7724. The Group 2811 Fax Center is to be used only for papers related to Group 2811 applications.

Any inquiry concerning this communication or any earlier communication from the Examiner should be directed to *Examiner Nadav* whose telephone number is (571) 272-1660. The Examiner is in the Office generally between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the **Technology Center Receptionists** whose telephone number is **308-0956**.



O.N.
September 2, 2004

ORI NADAV
PATENT EXAMINER
TECHNOLOGY CENTER 2800